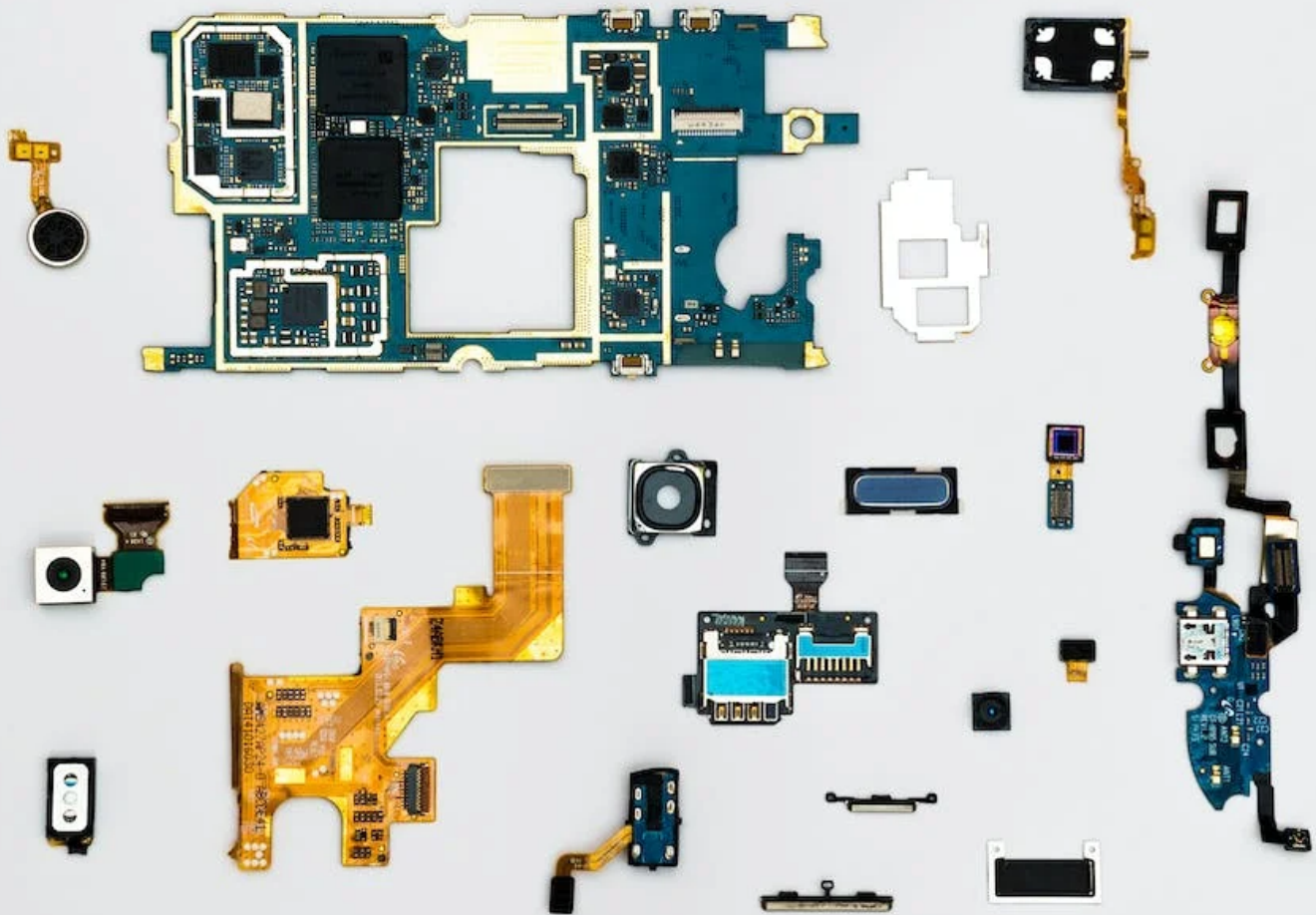


Re-Materialising the Digital 08.02.23 3-5pm

AN INTERDISCIPLINARY DIALOGUE ON ACTIONS,
CHALLENGES AND POSSIBLE FUTURES



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Centre for Data, Culture
and Society



Institute for Advanced
Studies in the Humanities

RE-MATERIALISING THE DIGITAL

AN INTERDISCIPLINARY DIALOGUE ON ACTIONS, CHALLENGES AND POSSIBLE FUTURES

As we become increasingly immersed in life online, the material reality of toxic harms to our lives and landscapes remains hidden from view. As we know, every stage of the process of producing, distributing, using, and finally disposing of digital devices creates a toxic legacy that has yet to be fully reckoned with. Invariably, the highly polluting stages in the production of digital technologies, from digging for ‘conflict minerals’ to dumping of digital debris in landfills, form the livelihoods of marginalized communities in developing countries of Africa, Asia and South America, where lax regulations enable the continued exploitation of vulnerable people and places. Moreover, the true environmental costs of sprawling energy-hungry and water-thirsty data centers, and the subterranean/marine wires and cables that give “life” to the Cloud, are becoming areas of study in themselves, through ‘critical infrastructure studies’ for example (e.g. Easterling 2014; Parks and Starosielski 2015). More broadly we can ask: what are the ways in which the digital and the virtual are transforming the material realities of harms of everyday life for people around the world?

Of course, the ‘digital’ was always inextricable from the ‘material’. The point of ‘*re-materialising*’, however, is to bring to critical attention the environmental and social burdens of our everyday, digitally-dependent lives. Re-materialising the digital therefore acknowledges the complexity of such problems, as being bound up with technoscientific, socio-cultural, and ethico-political issues. With acknowledged experts from around the world, this cross-disciplinary workshop invites you to engage in an afternoon of knowledge-exchange and conversation, to consider potential critical approaches, policy implications, and practical solutions to the problems of re-materialising the digital. The discussions can draw on but are not limited to the following topics:

- E-waste management as a political, social and cultural problem
- What kind of solutions are sustainable and affordable? What are the problems in implementing them?
- Cloud infrastructures (data centers/cables and wires) and their environmental and human costs
- AI ethics (ethical data sets and machine learning programmes) and the underlying physical architectures and infrastructures
- Policy and governance regulating big tech/industry/digital toxicities (e-waste, mining etc.)
- Sustainable and ethical design and innovation – challenges and triumphs
- The circular economy bill as ‘solution’
- Colonial histories of annexation, extraction, and exploitation supporting the new global digital architecture

SPEAKERS

Robert Porter (Research Director, Communication, Culture and Media Studies, Ulster University)

'Four Thoughts on Rematerializing the Digital'

The phrasing 'rematerializing the digital' can be seen as something of a provocation. In this short presentation, I would like to give a sense of some of things this phrase provokes me think about. The first thought is simply that the digital is dirty. The second thought is that this first thought doesn't necessarily come that easy, that ignoring the dirtiness of the digital is relatively easy. The third thought is there doesn't seem any widespread or significant encouragement to think about the dirtiness of the digital in everyday life. Fourthly, I wonder about the value in seeing the dirt.



Robert Porter is Director of Research in Communication, Media and Cultural Studies at Ulster University, UK. His latest book (co-authored with Kerry-Ann Porter and Iain Mackenzie), *University in Crumbs: A Register of Things Seen and Heard*, will be published by Rowman and Littlefield in June 2023.

Dipali Mathur (Digital Scholarship Postdoctoral Fellow, Institute for Advanced Studies in the Humanities (IASH))

'Re-materialising the Digital: Problematizing the E-waste Problem in India'

As a way of focusing my consideration of the material consequences of digital lives, I will discuss the 'end of life' governance of digital devices in India, which is the third-largest e-waste generator in the world by total volume. In pursuing how e-waste is made governable, I aim to render visible the thornier issues of digital colonialism and the asymmetries of power and privilege that structure contemporary waste management practices. In following the work of Lepawsky and Pickren, I am interested in "analysing the particular ways in which e-waste is politicized" (Pickren 2014: 5) and what is bracketed out of such governmental framings of the problem. In other words, I am interested in asking, "what are the colonial histories of 'our' digital cultures?" For instance, if data centers require "cheap energy, cheap space, proximity to ocean passage, lax regulation on data storage" (Bratton 2015: 116), then how have the colonial "processes of cheapening" (Patel and Moore 2018) land, labour and resources fueled western domination of the digital landscape? How does the contemporary management of e-waste expose structures of international governance that amount to the establishment of neo-colonial architectures of control?



Dipali Mathur completed her Ph.D. in Environmental Humanities and Cultural Studies from the University of Wollongong (UOW) Australia in March 2022 under the supervision of Professor Ian Buchanan. She was awarded the “Examiners’ Commendation for Outstanding Thesis Award” by UOW, and her thesis has recently been published as a monograph by Lexington Books-Rowman & Littlefield, *Available to be Poisoned: Toxicity as a Form of Life* (September 2022). Dipali is an Honorary Fellow at UOW Australia for the period 2022-2023, and she is an affiliated researcher with the Posthumanities Hub at Linköping University, Sweden. She is currently

a Digital Scholarship Postdoctoral Fellow at the Institute for Advanced Studies in the Humanities (IASH) at the University of Edinburgh, and has been awarded the Newton International Fellowship by the British Academy to carry out her project from 2023-2025 at Ulster University, Belfast.

Michelle Keown (Professor of Pacific and Postcolonial Literature at the University of Edinburgh)

‘E-waste mining in Enewetak: a continuation of the toxic legacies of US nuclear testing in the Marshall Islands’

The 67 US nuclear tests detonated in the Marshall Islands between 1946 and 1958 irradiated the bodies and environments of indigenous peoples, leaving toxic legacies that have affected human and environmental health across generations. This paper explores a particular site of nuclear and e-waste: the Runit Dome in the northern atoll of Enewetak. The dome was erected during a partial cleanup of Enewetak undertaken between 1977 and 1980, when some 73,000 cubic meters of irradiated surface soil from hotspots across Enewetak Atoll was dumped, along with metal, concrete, and other debris, into the 'Cactus' blast crater on Runit Island, and capped with concrete which has cracked, leaking radioactive isotopes into the already heavily contaminated lagoon. Today, ri-Enewetak (local peoples) impoverished by nuclear destruction of the local subsistence economy harvest copper wire and pipes from the abandoned military sites (including Runit Island) on Enewetak and sell these to local shopkeepers in order to earn vital income. The paper explores this deadly nexus between electronic and radioactive waste with reference to the longer duree of Cold War legacies in the Marshall Islands.



Michelle Keown is author/editor of various books focused on imperialism and indigeneity in the Pacific, including *Postcolonial Pacific Writing: Representations of the Body* (2005); *Pacific Islands Writing: The Postcolonial Literatures of Aotearoa/New Zealand and Oceania* (2007); and *Anglo-American Imperialism and the Pacific* (2018). Between 2017 and 2020, she led a Global Challenges Research Fund (UK) project focused on the legacies of US nuclear testing in the Marshall Islands, working alongside Kathy Jetñil-Kijiner and Solomon Enos to produce the graphic novel *Jerakiaarlap* (2019); graphic adaptations of Kathy’s antinuclear

poetry; and volumes of Marshallese children’s art and creative writing (see <http://www.map.llc.ed.ac.uk>).

Sean Smith (Chair of Future Construction, School of Engineering, University of Edinburgh)

'E-Waste & Infrastructure: Pre-emptive Design to Optimise Future Disassembly'

The high levels of decommissioning of infrastructure and buildings, or the regeneration for 'change of use', results in significant opportunities for re-use of materials or applications into other uses. One area which has not received the same level of focus is e-waste from such operations. Devices such as smoke detectors, alarms, energy control systems and lighting system electronic circuits often end up in landfill. Global demand for new infrastructure is accelerating and this paper will explore the opportunities of designing for disassembly in our future infrastructure enabling better circular economy outcomes and higher material recovery at the end of asset life.



Sean is Chair of Future Construction in the School of Engineering and Director of the Centre for Future Infrastructure within the Edinburgh Futures Institute at the University of Edinburgh. He undertakes a wide range of research for industry and public sector involving infrastructure including designing for net zero, engineering solutions for complex technical issues, mapping future skills and infrastructure needs and developing circular economy approaches for buildings and infrastructure.

Mark Paterson (Associate Professor, Dept. of Sociology, University of Pittsburgh)

'The coal-fired cloud: mundane architectures behind the screens'

Behind the shiny glass surface where we conduct most of our shopping these days, gargantuan shifts in the retail and physical landscapes are taking place. Warehouses and distribution centres are being built as logistics corridors visible from space, with a billion square feet of warehousing in the Inland Empire of California alone. Behind weightless metaphors such as the 'cloud', 'cloud computing', and 'fog computing' there have also been significant changes to the physical computing infrastructure, the vast data centres in North America, Europe, and Asia which store and serve the data through cables and wires, and need further infrastructure to be cooled, powered, and connected to wider networks. 'Critical infrastructure studies' (e.g. Easterling 2014; Parks and Starosielski 2015) has emerged as an academic subfield to study this. Proclamations by companies such as Google and Meta of 'transparency' with photographs of its data centres purport to show where the internet actually 'lives' yet, as Holt and Vonderau argue, these same companies remain largely secretive about "the less picturesque dimensions of cloud infrastructure" (2015: 74), including key technical details about its networking capabilities or energy consumption, which often remain concealed or 'blackboxed'. And yes, I will tell of the scandal of the coal-fired power station behind a Meta data centre.



Along with articles published in humanities and social science journals, Mark Paterson is author of books including the third edition of *Consumption and Everyday Life* (June 2023), *The Senses of Touch: Haptics, Affects and Technologies* (2007), *Seeing with the Hands: Blindness, Vision and Touch After Descartes* (2016), *How We Became Sensorimotor: Movement, Measurement, Sensation* (2021), and co-editor of a special issue of the journal *ACM Transactions in Human-Robot Interaction* on affect and embodiment. His current research is concerned with the role of embodiment in the histories of human-robot interactions.

His research website is <http://sensory-motor.com>

Chris Speed (Director, Edinburgh Futures Institute)

'I miss you'

The wonder that we have for our iPhones, Galaxies and Androids eclipses the challenges which are faced by communities and workers that are involved in the extensive networks which extract, process and supply factories with the rare minerals that make our phones work, and make them 'wonder-full'. The separation between the social and environmental effect of mineral extraction, and the social and cultural affect that our phones stimulate for us is irreconcilable. Through a short design performance, Chris will explore this separation and attempt to short cut it through audience participation.



Prof. Chris Speed FRSE, is Chair of Design Informatics at the University of Edinburgh where he collaborates with a wide variety of partners to explore how design provides methods to adapt and create products and services within a networked society. Chris is Director for the Edinburgh Futures Institute, involving the transformation of the 22,000m² Old Royal Infirmary of Edinburgh, a Florence Nightingale hospital in the centre of Edinburgh, into a world leading centre for interdisciplinary teaching, research and innovation. Chris is currently Director of the £7.4m Creative Informatics R&D Partnership, one of the

nine AHRC funded Creative Industries Clusters in the UK. Chris maintains research projects with partners across the UK and Europe including being a Co-I to the Next Stage Digital Economy Centre DECade led by Surrey with the Digital Catapult, and a Co-I to the DCODE European network and PhD program for training the next generation of researchers and designers to guide society's digital transformation towards inclusive, sustainable futures. Chris was made a Fellow of the Royal Society of Edinburgh in 2020.

Lesley McAra (Professor of Penology, Director of the Institute for Advanced Studies in the Humanities (IASH), University of Edinburgh)

Closing Remarks

REFRESHMENTS & DISCUSSION